

<p align="center">4 PHYSICAL PROPERTIES OF BLOOD</p>	<p align="center">Page 1 of 2</p>
<p align="center">Division of Forensic Science</p> <p align="center">BLOODSTAIN PATTERN ANALYSIS TRAINING MANUAL</p>	<p align="center">Amendment Designator:</p>
	<p align="center">Effective Date: 15-October-2004</p>
<p align="center">4 PHYSICAL PROPERTIES OF BLOOD</p> <p>4.1 Objectives</p> <p>4.1.1 To learn the components of blood as they relate to the study of Bloodstain Pattern Analysis.</p> <p>4.1.2 To understand the principles of fluid dynamics as they relate to the study of Bloodstain Pattern Analysis.</p> <p>4.2 Methods of Instruction</p> <p>4.2.1 Topics to be discussed and/or presented include, but are not limited to, the following:</p> <p>4.2.1.1 Fluid Dynamics (cohesion, surface tension and viscosity)</p> <p>4.2.1.2 Drying time</p> <p>4.2.1.3 Clotting time</p> <p>4.2.1.4 Volume of Blood drops</p> <p>4.2.1.5 Size of stain</p> <p>4.2.1.6 Surface effects</p> <p>4.2.1.7 Terminal velocity</p> <p>4.2.1.8 Effect of Blood Thinners</p> <p>4.2.1.9 Capillary action</p> <p>4.2.2 Assignment</p> <p>Several articles and handout materials referencing miscellaneous aspects of fluid dynamics; such as surface tension, viscosity, drop volume, etc., have been provided. Please review this information and prepare a brief written outline of aspects and/or issues to be discussed. Fluid dynamics will be discussed and how these physical properties influence stains and interpretation of them.</p> <p>4.2.3 Literature References</p> <p>4.2.3.1 Anderson, J. W., "Capillarity Distortion Analysis" IABPA 1993 Annual Training Conference</p> <p>4.2.3.2 Hurley, M. N., Pex, J. O. "Sequencing of Bloody Shoe Impressions by Blood Spatter and Blood Droplet Drying Times", Oregon State Police Crime Laboratory</p> <p>4.2.3.3 White, B., "Bloodstain Patterns on Fabrics: The Effect of Drop Volume, Dropping Height and Impact Angle", Can. Soc. Forensic Science J. Vol.19, No. 1 (1986)</p> <p>4.2.3.4 Laber, T. L. "Diameter of Bloodstain as a Function of Origin, Distance Fallen, and Volume of Drop" Minnesota Forensic Science Laboratory</p> <p>4.2.3.5 Epstein, B., Laber, T. L., "Preliminary Results – Clotting Time Studies" Minnesota Forensic Science Laboratory</p>	

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<div> <div>4.2.3.6</div> <div>Lee, H., “Procedures for Determination – The Volume of Dried Bloodstain”</div> </div> <div> <div>4.2.3.7</div> <div>Christman, D. V., “A Study to Compare and Contrast Animal Blood to Human Blood Product”</div> </div> <div> <div>4.2.3.8</div> <div>Donohue, P. G., “Blood thinner can cause bruises”, Richmond Times-Dispatch, May 21, 1996</div> </div> <div> <div>4.2.3.9</div> <div>Raymond, M. A., Smith, E. R., Liesegang, J., “The Physical Properties of Blood-Forensic Considerations” Science & Justice, Journal of the Forensic Science Society 1996: 36(3) 153-160</div> </div> <div> <div>4.2.3.10</div> <div>Bunker, J., “Blood Dynamics (In motion and on impact)” April 22, 1991</div> </div> <div> <div>4.2.3.11</div> <div>Pizzola, P. A., Roth, S. and Deforest, P. R., “Blood Droplet Dynamics – I+II” Journal of Forensic Sciences JFSCA, Vol.31 No.1, Jan. 1986 pp. 36-49</div> </div> <div> <div></div> <div>◆End</div> </div>	